

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please amend claims 1-34 as follows:

1. (Currently Amended) A method ~~Method~~ for detecting ~~[[the]]~~ a shutter opening angle ~~(light or dark sector)~~ of an adjustable rotating shutter mounted in a film camera which ~~consists of~~ comprises a circular segment or circular sector shaped shutter vane driven through a shutter shaft by a shutter motor, and ~~[[of]]~~ a shutter adjustment vane mounted coaxial with the shutter vane and adjustable relative thereto by means of a shutter adjustment vane motor, ~~characterised in that~~ the method comprising:

detecting the position of shutter vane and the shutter adjustment vane ~~the position of the shutter vane (2) and the position of the shutter adjustment vane (3) are detected~~ during rotation of the rotatable shutter; ~~[[(1)]]~~ and

ascertaining the difference between the two positions ~~is formed~~ as a value, said value being representative ~~[[for]]~~ of the shutter opening angle ~~or the light or dark sector~~ of the rotatable shutter (1).

2. (Currently Amended) The method ~~Method~~ according to claim 1, ~~characterised in that the~~ wherein an absolute position

of the shutter vane [(2)] and an absolute position of the shutter adjustment vane ~~(3)~~ are detected with a resolution of n steps during one revolution of the rotatable shutter [(1)] and the shutter opening angle of the rotatable shutter (1) is determined from the equation

$$\alpha = P_{BF} - P_{VF} \text{ } 8 \text{ } 360^\circ / n$$

[[with]] wherein

P_{BF} is the position of the shutter vane and

P_{VF} is the position of the shutter adjustment vane,

wherein ~~with an~~ when the value of angle α which is less than 0° the value is increased around by 360° [[so]] as long until it as the resulting value is greater than or equal to 0° or ~~with an~~ when the value of angle α which is greater than or equal to 360° the value is reduced around by 360° [[so]] as long until it as the resulting value is less than 360° .

3. (Currently Amended) The method ~~Method~~ according to claim 2, ~~characterised in that~~ wherein the absolute positions of the shutter vane [(2)] and the shutter adjustment vane [(3)] are determined [[from]] using coded sensor tracks.

4. (Currently Amended) The method ~~Method~~ according to claim 3, ~~characterised in that~~ wherein the absolute positions of the shutter vane [(2)] and the shutter adjustment vane [(3)] are detected as a sine and cosine signal per revolution of the rotating shutter [(1)] and the shutter opening angle of the rotating shutter [(1)] is determined through an arctan calculation from the sine and cosine ~~signal~~ signals.

5. (Currently Amended) The method ~~Methed~~ according to ~~at least one of the preceding claims, characterised in that~~ claim 1, wherein the positions of the shutter vane ~~[[2]]~~ and the shutter adjustment vane ~~[[3]]~~ are detected incrementally, ~~[[that]] wherein~~ at least one ~~index or reference mark~~ signal is provided per revolution of the rotatable shutter ~~[[1]]~~ and ~~[[that]] wherein~~ the detected incremental signals are stored with the ~~appearance of~~ the reference ~~[[mark]]~~ signal and wherein the shutter opening angle (α) of the rotatable shutter ~~[[1]]~~ is determined from the equation

$$\alpha = (Z_{BF} - Z_{VF} + K) * 360/n$$

~~[[with]]~~ wherein

Z_{BF} is the counter state of the shutter vane

Z_{VF} is the counter state of the shutter adjustment vane

and

O is a constant off-set which is determined from the equation

$$O = I_{BF} + I_{VF} + K$$

~~[[with]]~~ wherein

I_{BF} is the index position of the shutter vane

I_{VF} is the index position of the shutter adjustment vane and

K is a calibrating value

wherein ~~[[with]]~~ when the value of an angle α which is less than 0° the value is increased ~~around~~ by 360° ~~[[so]]~~ as long as the resulting value ~~until it~~ is greater than or equal to 0° or when the value of an angle α ~~which~~ is greater than

equal to 360° the value is reduced ~~around~~ by 360° ~~[[so]]~~ as long as the resulting value ~~until it~~ is less than 360° and wherein the calibrating value (K) is a correcting value arising from the relationship of ~~[[the]]~~ a reference ~~marks~~ mark which is ~~[[are]]~~ coupled to ~~the revolutions of~~ the shutter vane ~~[[2]]~~ and a reference mark which is coupled to ~~the revolutions of~~ the shutter adjustment vane ~~[[3]]~~, wherein said reference marks are used in generating said at least one reference signal.

6. (Currently Amended) The method ~~Method~~ according to claim 1, ~~characterised in that~~ wherein ~~[[the]]~~ absolute positions of the shutter vane ~~[[2]]~~ and the shutter adjustment vane ~~[[3]]~~ are determined from distance-coded reference marks.

7. (Currently Amended) The method ~~Method~~ according to claim 1 ~~for detecting, adjusting and/or regulating the shutter opening angle (light or dark sector) of the rotatable shutter which is mounted in a film camera, characterised in that~~ wherein the ~~light or dark sector~~ shutter opening angle value ~~determined from the difference between the positions of the shutter vane (2) and the shutter adjustment vane (3)~~ is supplied as an actual value to a shutter adjustment vane position regulating device, ~~(12) at which~~ wherein an ideal value of the ~~light or dark sector~~ shutter opening angle ~~inputted~~ is manually input, through an interface ~~(15) to the camera control, is emitted and which forms from~~ wherein the difference between the ideal and actual value of the ~~light or dark sector~~ shutter opening angle is a setting variable for the shutter adjustment vane motor ~~[[33]]~~.

8. (Currently Amended) The method ~~Method~~ according to claim 1, ~~characterised in that~~ wherein the positions of the shutter vane ~~[(2)]~~ and shutter adjustment vane ~~[(3)]~~ are interpolated before ~~the formation of~~ ascertaining the difference.

9. (Currently Amended) The method ~~Method~~ according to claim 1, ~~characterised in that~~ wherein a mechanical locking or unlocking of the shutter adjustment vane ~~[(3)]~~ is ~~scanned with~~ determined by scanning at a predetermined frequency and wherein ~~when in the event of mechanical locking of~~ the shutter adjustment vane ~~[(3)]~~ is mechanically blocked, a control of the shutter adjustment vane motor ~~[(33)]~~ is blocked.

10. (Currently Amended) The method ~~Method~~ according to claim 1, ~~characterised in that~~ wherein the position ~~signals~~ indicating the position of the shutter vane, ~~(2)~~ and the position of the shutter adjustment vane (3), the ~~absolute value~~ of the ~~light or dark sector~~ shutter opening angle of the adjustable rotatable shutter ~~[(1)]~~ and ~~[[the]]~~ signals scanning relating to the mechanical locking or unlocking of the shutter adjustment vane ~~[(3)]~~ are processed ~~[[in]]~~ by a control logic ~~[(11)]~~.

11. (Currently Amended) The method ~~Method~~ according to claim 10, ~~characterised in that~~ wherein the control logic ~~[(11)]~~ initialises the detected positions ~~position-detections~~.

12. (Currently Amended) The method ~~Method~~ according to claim 1, ~~characterised in that~~ wherein a setting value for the shutter adjustment vane motor ~~[(33)]~~ is transferred contactlessly by ~~[[the]]~~ a shutter adjustment vane position

regulating device ~~[[12]]~~ to the shutter adjustment vane motor ~~[[33]]~~.

13. (Currently Amended) A device ~~Device~~ for detecting the shutter opening angle ~~(light or dark sector)~~ of an adjustable rotatable shutter mounted in a film camera which ~~consists of~~ comprises a circular segment or circular sector shaped shutter vane driven through a shutter shaft by a shutter motor, and ~~[[of]]~~ a shutter adjustment vane mounted coaxial with the shutter vane and adjustable relative thereto by means of a shutter adjustment vane motor, the device comprising:
~~characterised by~~

- a first sensor ~~[[7]]~~ coupled to the shutter vane ~~[[2]]~~ for scanning sensing a position of the shutter vane ~~position~~ and emitting a shutter vane position ~~signals~~ signal;
- a second sensor ~~[[8]]~~ coupled to the shutter adjustment vane (3) for scanning sensing a position of the shutter adjustment vane ~~position~~ and emitting a shutter adjustment vane position ~~signals~~ signal; and
- a position counter ~~(10)~~ charged with receiving the shutter vane ~~position signals~~ and the shutter adjustment vane position signals for forming and ascertaining the difference between the shutter vane position ~~signals~~ signal and the shutter adjustment vane position ~~signals~~ signal.

14. (Currently Amended) The device ~~Device~~ according to claim 13, ~~characterised in that the~~ wherein the first and second sensors ~~(7, 8) consist of~~ comprise absolute angle measuring instruments with several code tracks ~~(701, 703-706)~~ mounted on a

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graduated plate ~~(70b)~~ and scanning devices ~~(716, 717)~~ assigned to the code tracks ~~(701, 703-706)~~.

15. (Currently Amended) The device ~~Device~~ according to claim 14, ~~characterised in that~~ wherein the absolute angle measuring instruments ~~consist of~~ comprise absolute coders, resolvers or pole wheel sensors.

16. (Currently Amended) The device ~~Device~~ according to claim 13, ~~characterised in that~~ wherein the first and second sensors ~~(7, 8)~~ ~~consist of~~ comprise incremental angle measuring instruments with a periodic incremental track ~~(701)~~ mounted on a graduated plate ~~(70a)~~ and a reference mark track ~~(702)~~ which has at least one reference mark fixing ~~[[the]]~~ an absolute position of the graduated plate ~~(70a)~~ ~~and assigning this to a measuring step,~~ and ~~[[of]]~~ scanning devices ~~(71, 715)~~ associated with the incremental and reference mark track ~~(701, 702)~~.

17. (Currently Amended) The device ~~Device~~ according to claim 16, ~~characterised in that~~ wherein the reference mark track has distance-coded reference marks on which reference marks are made with defined variable spacing.

18. (Currently Amended) The device ~~Device~~ according to at least one of claims 14 to 17, ~~characterised in that the~~ wherein the first and second sensors ~~(7, 8)~~ have graduated plates ~~(70e)~~ with ~~additional~~ sine and cosine tracks ~~(707, 708)~~ and wherein ~~[[that]]~~ a computing unit connected ~~in on the~~ to an output side of ~~the scanning device~~ one of said scanning devices detects ~~detecting the sensor signals of the~~ sine and cosine signals ~~is~~

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~~charged with the sine and cosine signals~~ and issues arctan values calculated from the sine and cosine signals.

19. (Currently Amended) The device ~~Device~~ according to claim 13, ~~characterised in that~~ wherein the first and second sensors ~~(7, 8)~~ are ~~formed as~~ absolute or incremental angle measuring instruments ~~[[with]]~~ comprising photo electric, magneto resistive or permanent magnetic scanning capability.

20. (Currently Amended) The device ~~Device~~ according to claim 13 ~~for detecting, setting and/or regulating the shutter opening angle (light or dark sector) of the adjustable rotatable shutter mounted in a film camera,~~
characterised by further comprising:

- a control logic ~~(11)~~ charged with receiving a signal relating to the difference between the shutter vane position signals signal and the shutter adjustment vane position signals and signal, wherein the control logic is connected to an interface [[(19)]] ~~for the on a control of the film camera;~~ and
- a shutter adjustment vane position regulating device ~~(12)~~ which receives on an input side [[with]] a signal relating the difference of the shutter vane position signals signal and the shutter adjustment vane position signals signal, as well as with and an ideal value issued by the control of the film camera through an interface [[(15)]] for the shutter adjustment vane [[(3)]] or for the light sector (dark sector) shutter opening angle of the adjustable rotatable shutter, wherein said shutter adjustment vane position regulating device outputs from an (1) and on the output side issues a setting variable for the shutter adjustment vane motor [[(33)]].

21. (Currently Amended) The device ~~Device~~ according to claim 13, ~~characterised by comprising~~ a safety scanning device ~~(9) mounted in the rotational area of the adjustable rotatable shutter (1) for detecting the light or dark sector shutter opening angle of the adjustable rotatable shutter , wherein an output of said safety scanning device (1) whose output is connected to [[the]] a control logic [(11)] for issuing absolute values of the light or dark sector shutter opening angle of the adjustable rotatable shutter [(1)]].~~

22. (Currently Amended) The device ~~Device~~ according to claim 20 or 21, ~~characterised in that wherein~~ the control logic ~~[(11)]~~ is connected on ~~[(the)]~~ an input side to a scanning device ~~[(14)]~~ for detecting ~~[(the)]~~ mechanical locking of the shutter adjustment vane, wherein the control logic (3) and blocks the control of the shutter adjustment vane motor (33) in the event of when activated mechanical locking of the shutter adjustment vane [(3)] is detected.

23. (Currently Amended) The device ~~Device~~ according to claim 13, ~~characterised in that the wherein~~ a shutter adjustment vane position regulating device ~~[(12)]~~ is connected through a device ~~[(13)]~~ for controlling the shutter adjustment vane motor ~~[(33)]~~ to an energy transfer device and a signal transfer device ~~(61, 62, 63, 64, 65, 68, 69)~~ for controlling ~~or feeding~~ the shutter adjustment vane motor ~~[(33)]~~.

24. (Currently amended) The device ~~Device~~ according to claim ~~[(13)]~~ 23, ~~characterised in that wherein the~~ shutter adjustment vane position regulating device ~~[(12)]~~ is connected

through the energy transfer device ~~(61, 62, 63)~~ to a motor amplifier ~~[[66]]~~ as well as through the signal transfer device ~~(64, 65, 68, 69)~~ to a processor ~~[[60]]~~ for controlling and regulating the shutter adjustment vane motor ~~[[33]]~~.

25. (Currently Amended) The device ~~Device~~ according to claim 24, ~~characterised in that the~~ wherein a control device of the motor amplifier ~~[[66]]~~ connected to the energy transfer device ~~(61, 62, 63)~~ is connected to a first output of the processor ~~[[60]]~~ which is connected ~~by a first input to the~~ output of an actual value measuring amplifier ~~[[67]]~~ which is connected to a potentiometer transmitter ~~[[34]]~~ coupled to the shutter adjustment vane motor ~~[[33]]~~, and ~~[[that]]~~ wherein a ~~each one~~ second input and output of the processor ~~(60)~~ is are connected to the ~~bi-directional~~ signal transfer device ~~(64, 65, 68, 69)~~.

26. (Currently Amended) The device ~~Device~~ according to one of the preceding claims 23 to 25, ~~characterised by~~ wherein at least one of said ~~a contactless~~ energy transfer device ~~(61, 62, 63)~~ and/or a contactless and signal transfer device ~~(64, 65, 68, 69)~~ generates a signal and provides for the contactless transfer of said signal.

27. (Currently Amended) The device ~~Device~~ according to claim 23, ~~characterised in that~~ wherein the energy transfer device ~~(61, 62, 63)~~ ~~consists of~~ comprises a divided transformer ~~[[62]]~~ operated at high frequency ~~[[and]]~~ whose having a primary winding ~~(621)~~ is connected to a direct current converter ~~[[61]]~~ on ~~[[the]]~~ a primary side and ~~whose~~ a secondary winding

~~(622)~~ is connected to a direct current converter ~~[[(63)]]~~ on ~~[[the]]~~ a secondary side.

28. (Currently Amended) The device ~~Device~~ according to claim 23, ~~characterised in that~~ wherein the signal transfer device ~~(64, 65, 68, 69)~~ each consists of comprises an optical transmitter ~~(64, 68)~~ and an optical receptor ~~(65, 69)~~ for ~~[[the]]~~ bi-directional signal exchange between the shutter adjustment vane position regulating device ~~[[(12)]]~~ and the processor ~~[[(60)]]~~.

29. (Currently Amended) The device ~~Device~~ according to claim 23, ~~characterised in that~~ wherein the signal transfer device ~~consists of~~ comprises an inductive signal transfer device for the bi-directional signal exchange between the shutter adjustment vane position regulating device ~~[[(12)]]~~ and the processor ~~[[(60)]]~~.

30. (Currently amended) The device [Device] according to claim 23, ~~characterised in that~~ wherein the signal transfer device ~~consists of~~ comprises a carrier frequency signal transfer device for the bi-directional signal exchange between the shutter adjustment vane position regulating device ~~[[(12)]]~~ and the processor, wherein said carrier frequency signal transfer device modulates and superimposes ~~(60) with which the signals are modulated up with~~ to a carrier frequency ~~[[to]]~~ of the energy supply of the shutter adjustment vane motor ~~[[(33)]]~~.

31. (Currently amended) The device ~~Device~~ according to claim 13, ~~characterised in that the~~ wherein a shutter adjustment vane position regulating device ~~[[(12)]]~~ controls the shutter

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adjustment vane motor ~~[[33]]~~ through a motor end stage ~~[[13]]~~ and a rotational connection or a slip ring ~~[[6]]~~.

32. (Currently Amended) The device ~~Device~~ according to claim 13, ~~characterised in that the~~ wherein the first and second sensors ~~(7, 8)~~ for scanning the shutter vane position and the shutter adjustment vane position are coupled to the shutter shaft ~~[[20]]~~ and ~~[[the]]~~ to a shutter adjustment vane shaft ~~[[30]]~~.

33. (Currently Amended) The device ~~Device~~ according to claim 13, ~~characterised in that~~ wherein the shutter shaft ~~[[20]]~~ is connected to a shutter drive through gearing ~~[[21]]~~.

34. (Currently Amended) The device ~~Device~~ according to claim 13, ~~characterised in that~~ wherein the shutter adjustment vane ~~[[3]]~~ is connected to the shutter adjustment vane motor ~~[[33]]~~ through a shutter adjustment vane shaft ~~[[30]]~~ and a gearing ~~(31, 32)~~ guided through within the shutter shaft ~~[[20]]~~.